

CLAIMS:

1. A device for the inspection of surfaces, notably for the inspection of the surface (surfaces) (10) of one or more semiconductors (14), which device includes at least one laser light source (1) and a detector (28) for light (13) that is reflected by the surface (10) to be inspected, characterized in that the device includes at least one mode filter (15; 15.1) that is associated with the reflected light (13).

2. A device as claimed in claim 1, characterized in that the mode filter (15; 15.1) suppresses that mode in the reflected light (13) that corresponds to the mode of the laser light source (1).

3. A device as claimed in one of the claims 1 or 2, characterized in that the device includes a beam splitter (21) which splits a light beam (13) into at least two sub-beams (13.2; 13.3) that interfere with one another.

4. A device as claimed in claim 3, characterized in that one of the sub-beams (13.3) traverses a device (22) for mode-selective phase shifting.

5. A device as claimed in claim 4, characterized in that the device (22) realizes a phase shift of a mode through 180° overall, together with the difference in path length, so that the sub-beams (13.2; 13.3) interfere destructively in respect of this mode.

6. A device as claimed in claim 5, characterized in that a lens system (26; 27) that operates on the basis of the Guoy phase system is provided so as to realize the phase shift through 180°.

7. A mode filter for suppressing one or more modes present in a light beam (13), characterized in that the mode filter (15.1) operates in conformity with the Guoy phase principle.

8. A mode filter as claimed in claim 7, characterized in that for this purpose beam splitting is performed in the mode filter (15.1) and that there is provided a device (22) which inverts the phase of one of the sub-beams (13.3) and includes two converging lenses (26; 27) in the focal point (F4) of which there is realized a phase shift.

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9. A method for the inspection of surfaces, notably for the inspection of the surface (surfaces) of one or more semiconductors, said surface being irradiated by means of at least one laser light source and the light that is reflected by the surface to be inspected being detected in at least one detector, characterized in that the laser light source emits light of a defined mode and that light that is reflected by the surface is guided through a mode filter.

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10. A method as claimed in claim 9, characterized in that the mode filter suppresses the mode of the laser light source and that no signal is detected in the case of reflection that does not affect the mode.

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